

Patent Application of James D. Wayne Gray for "Asset Management Of Livestock In An Open Range Using Satellite Communications"

Page 17

I claim:

1. A method for automated remote monitoring and data entry for livestock management, capable of monitoring individual animals on an open range, within a corral and/or feedlot with a method and system for livestock data collection comprising:
 - an integrated system of hardware and software with a means to automatically collect and organize individual animal livestock data from an active electronic identification tag via a satellite relay device to a collection hub that provides for electronic re-distribution globally over the Internet or a private network; and
 - an individual animal radio frequency identification device code, visual numeric code label and satellite transmitter device code, wherein said numeric code label and radio frequency identification device codes are correlated with a particular individual satellite transmitter device code such that one individual animal is uniquely identified by said numeric device in the software data collection system,
 - said individual animal radio frequency identification device that collects at least one data record containing characteristics specific to the individual animal and these specifics are relayed by satellite to the network hub and stored in the software's electronic data record for the individual animal; with
 - said data record having the a method of being appended by semi-automatic or manual means from remote locations connected to the information server over a public network.

Patent Application of James D Wayne Gray for "Assessment Management Of Livestock In An Open Range Using Satellite Communications"

Page 18

2. A means of Claim 1 of providing information collection via a software and hardware system to permit automatically polled data entry of information related to an individual or group of animals into an integrated information collection system for livestock management, the software system comprising:
 - automated periodic scheduled polling of animal electronic tag for collection of animal location and applicable biometric information via satellite relay communications link, and
 - generating an electronic data record and at least one electronic code record for each animal to be registered at a livestock producer location,
 - a group of information electronic worksheets for recording characteristics common to an individual or group of animals updated automatically from collection of data and made available over the network to the livestock producer and other entities;
 - allowing a publicly networked access device to at least one numeric code, wherein said numeric code is correlated with a particular individual animal radio frequency identification device such that one individual animal is uniquely identified by both said numeric code radio frequency identification device and said radio transmitter identification code; and
 - providing the capability to automatically notify the registered livestock representative by a publicly networked access device such as electronic mail, pager text display, personal data assistant device display, or by phone if a critical parameter being monitored such as animal temperature, animal location, or range grazing level is outside a defined limit.

Patent Application of James D. Wayne Gray for "Assessment Management Of Livestock In An Open Range Using Satellite Communications"

Page 19

3. A method for automatic, semi automatic and manual entry of data into an integrated electronic information base for livestock management and data collection comprising;
automated electronic registration form which includes fields for the date and time, latitude and longitude location of the individual livestock animal, time tagged monitored biometric reading of individual livestock animal, identification code that has been assigned to the livestock producer,
semi-automatic entry of electronic registration, by selecting a common group of characteristics applied to an individual animal or group of animals, adding data records for a group of animals to a larger group of animals, moving a group of animal data records from a larger group to a sub-group or to different group, a manual entry of electronic registration form for entering the billing address for the registering livestock manager, billing phone number for the registering livestock manager, all contact and location telephone numbers for the registering livestock owner or organization, all electronic mail, cell phone, or personal data assistant numbers or electronic addresses for automated event notification, and the contact person(s) at the site where the animal is located.
4. A means for Claim 3 for of manual and semi automatic data entry into an integrated database for livestock management and data collection consisting of;
assigning an individual livestock group and individual identifier with subgroup identifiers, and

Patent Application of James D Wayn Gray for "Asset Management Of Livestock In An Open Range Using Satellite Communications"

Page 20

providing networked access to at least one animal electronic data record, said animal electronic data record containing data fields in which characteristics specific to an individual animal which may be automatically/ semi automatically/ or manually recorded on the animal electronic data record;

a livestock producer entity identification means for identifying a livestock producer location with an individual or group of animals within the data collection software;

completing an electronic registration form whereby a non-automated livestock producer is enrolled into an automated system, said electronic registration form containing fields for identifying information and contact information for said livestock producer;

processing the electronic registration form through an electronically networked processing data server; assigning an electronic livestock producer identification code to each livestock producer location being registered, thereby identifying a livestock producer with a livestock producer identification code,

automatically applying the numeric code for the livestock producer to the corresponding registration electronic data,

completing an electronic data record by supplying pertinent information on a particular animal, said data record having a unique animal identification numeric code for identifying the animal.

5. A means of asset management wherein the electronic data record includes fields for the complete information of the individual livestock animal consisting of;

Patent Application of James D. Wayne Gray for "Assessment Management Of Livestock In An Open Range Using Satellite Communications"

Page 21

the ranch/farm or on which the animal is located,
visual identification tag number for the animal,
animal's sex,
brand,
method and dosage of medications and vaccinations,
all feeding records including type, brand, and source
all treatments a particular animal underwent,
animal's frame rated as 1-10, animal's health condition rated as 1-10, animal's
breed,
sire or dam code as such code is defined by the electronic data record,
animal's birth date,
animal's color,
animal's weight at a time tagged date,
pregnancy checks performed on the animal,
user configurable records as needed to define a characteristic of an individual
animal or group,
miscellaneous notes as applicable to an individual animal that may be recorded
for future reference.

6. The method of Claim 5 wherein entering and storing the information from each animal's electronic data record into an integrated electronic database includes the steps of;

Patent Application of James DeWayne Gray for "Assessment Management Of Livestock In An Open Range Using Satellite Communications"

Page 22

manually entering information on individual animal over an electronic network

data entry device such as a computer terminal connected to the Internet,

entering information on individual animal over an electronic network with a

handheld networked device,

verifying that the livestock producer identification code has been assigned and

stored in data collection software program,

entering and storing the information from each data record into a data collection

software program,

a group of information electronic worksheets for recording characteristics

common to the group of animals.

7. A means of graphically displaying range land location and individual animals within that area consisting of;

graphical representation of area of interest that can be re-scaled as required by

using a network browser interface,

longitude, latitude, and any biometric information of each animal displayed when

selected by graphic pointing device,

additional informative information displayed as may be available.

8. A method in Claim 7 of predicting range land capacity and generating a warning message of an over grazing condition consisting of;

stored reference data of the environmental conditions of range land; and

an algorithm that compares the capacity against the number of animals and the amount of time animals are within grazing area to determine available food source;

dynamically scalable electronic map accessible over the network by a display device such as a personal computer, or personal data unit connected to the network of the location of the animal(s) in the electronic data records maintained by the livestock owner displaying pasture physical representation and current grazing capacities that automatically track the available resource based on number of animals and duration of animals in the pasture along with historical grazing capabilities definable by default for the specific geographical area and modifiable by the livestock owner with local knowledge increase or decrease of capacity.

9. The means of asset management in an open range wherein the individual animal has a visual and electronic identification tag consisting of;

an electronic identification outer shell with visual identification number on the tag shell,

an active data processing and memory section,

a radio frequency identification device transponder reader,

an active satellite transmitter tag device which provides a unique electronic identification code when transmitting or is queried by a satellite radio frequency source and that code identifies a particular animal,

Patent Application of James D. Wayne Gray for "Asset Management Of Livestock In An Open Range Using Satellite Communications"

Page 24

an electronic identification tag that is a battery powered electronic tag device with external visual numeric code,

an electronic identification tag that includes solar powered battery recharge capabilities,

an individual animal identification tag that collects and stores data from a radio frequency identification device with unique identification number and biometric information of the animal such as may be available,

an electronic identification tag that contains a global positioning sensor and utilized as a frequency stability source for the satellite and also provides additional information for the individual animal data record for automatic data collection which includes latitude, longitude, time of data record collection, automatic periodic transfer of stored data from the electronic identification tag to the information collection hub server via a relay satellite where the animal's unique identification and data is stored into an integrated electronic file,

an electronic identification tag transmitter that will also transmit when exposed to a microwave field such as those found in existing chute or hand scanners,

an electronic transmitter frequency that will automatically change to match reader devices currently in use when exposed to such microwave field,

an electronic tag battery will be disabled when exposed to such microwave fields,

an electronic tag will store latitude, longitude, date and time information when exposed to such microwave field,

Patent Application of James DeWayne Gray for "Assessment Management Of Livestock In An Open Range Using Satellite Communications"

Page 25

an electronic tag will transmit to satellite data stored during exposure to external microwave field to network hub server during next communications link.

10. A means of removing and replacing of the electronic identification tag electronic subsystem and placing those electronics into new electronic tag shell consisting of;
 - an electronic plastic shell with hollow interior that holds an electronic tag electronic module subsystem,
 - an electronic tag shell with imbedded solar collector and satellite communications antenna that mate with electronic module when inserted into the hollow tag shell,
 - an electronic tag shell that is permanently sealed after the electronic tag module is inserted,
 - an electronic tag shell that has marking indicators where tag can be cut open and electronic module removed,
 - an electronic tag electronic module that has removable replaceable power source,
 - an electronic tag electronic module that has connector fittings for solar collector and satellite antenna that are imbedded into the electronic tag plastic shell.